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14. ABSTRACT: The purpose of this Minority Institution Partnership Training Award is to train University of Texas at Brownsville (UTB) faculty to conduct breast cancer research by collaborating with faculty from the University of Texas-Houston School of Public Health (UTSPH). Three UTB faculty will undergo intensive training provided by six UTSPH faculty during year 1. To reinforce training, faculty from UTB and UTSPH will conduct a clinic-based case-control study of breast cancer to investigate its' association with hormones, diet and body size in years 2 through 4. Specific aims include: 1) to provide UTB faculty training through classes, presentations and seminars to gain knowledge of epidemiology, proposal development, behavioral sciences, and biostatistics offered by UTSPH faculty, and 2) to design and conduct a clinic-based case-control study to include completion of a questionnaire, anthropometry and a blood draw.
During the second year of the project, Dr. Peltz (UTB) took epidemiology (advanced epidemiologic methods I and cancer), community health assessment, proposal development, and completed an individual study and a practicum, Dr. Estrada (UTB) audited epidemiology and biostatistics, and Dr. Johnson (UTB) audited two behavioral sciences courses. Data collection began for the clinic-based case-control study, the South Texas Women's Health Project. To increase the number of breast cancer cases, the number of study sites was increased and the protocol was revised to approach surgeons and oncologists. Dr. Peltz (UTB) received supplemental funding to add a urine collection component to the South Texas Women's Health Project. Dr. Peltz (UTB) received funding to conduct a pilot study of body composition and leptin concentration. Dr. Sanderson (UTSPH) received funding to develop a regional cancer registry.

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Introduction

The purpose of this Minority Institution Partnership Training Award is to train University of Texas at Brownsville (UTB) faculty to conduct breast cancer research by collaborating with faculty from the University of Texas-Houston School of Public Health (UTSPH). Three UTB faculty will undergo intensive training provided by six UTSPH faculty during year 1. Additional training will take place in subsequent years. To reinforce training, faculty from UTB and UTSPH will conduct a clinic-based case-control study of breast cancer to investigate its' association with hormones, diet and body size in years 2 through 4. Specific aims are: 1) to provide UTB faculty training through classes, presentations and seminars to gain knowledge of epidemiology, proposal development, cancer epidemiology, intervention mapping, field epidemiology, biostatistics, and nutrition epidemiology offered by UTSPH faculty in-person from Brownsville and via ITV from Houston, 2) to design and conduct a clinic-based case-control study to include completion of a questionnaire, anthropometry and a blood draw, 3) to disseminate findings to the Texas Department of Health, the Department of Defense, and local health providers and health clinics, and 4) to submit proposals to conduct larger population-based case-control studies of breast cancer in the Lower Rio Grande Valley.

Body

This project is occurring in two phases, the training phase (year 1) and the investigation phase (years 2 through 4). The only training task that was fully completed during the first year of the project was training task 5. During the second year of the project, we partially completed training task 1 by Dr. Peltz (UTB) taking advanced epidemiologic methods I and individual study in Fall, 2004, proposal development and community health assessment in Spring, 2005, and cancer epidemiology and practicum in Summer, 2005. Based on the proposal he wrote in the proposal development course, Dr. Peltz (UTB) received funding to conduct a pilot study of body composition and leptin concentration. Although Drs. Estrada (UTB) and Johnson (UTB) will not earn a Master's of Public Health degree, they audited introductory epidemiology (Dr. Estrada) and introductory behavioral sciences (Dr. Johnson) in Fall, 2004, and introductory biostatistics (Drs. Estrada and Johnson) in Spring, 2005. We further completed training task 2 by Dr. Sanderson (UTSPH) receiving funding from the Texas Cancer Council to investigate the possibility of utilizing electronic pathology lab reporting to the Texas Cancer Registry on the Texas and Mexico sides of the border. We further completed training task 3 by adding four study sites (Valley Baptist Medical Center-Brownsville, Valley Regional Medical Center, Harlingen Medical Center, and Dolly Vinsant Memorial Hospital) to the South Texas Women's Health Project. We further completed training task 4 by adding urine collection to the South Texas Women's Health Project with supplemental funding Dr. Peltz (UTB) received from the Department of Defense. We further completed training task 6 by designing the protocol for high-performance liquid chromatography to analyze urinary phytoestrogens to the existing protocols for the South Texas Women's Health Project. We further completed training task 7 by obtaining initial institutional review board approval from Dolly Vinsant Memorial Hospital on November 16, 2004, from Valley Baptist Medical Center-Brownsville on November 22, 2004, and from Harlingen Medical Center on May 5, 2005; institutional review board approval from Valley Regional Medical Center is pending. We further completed training task 8 by revising the study design to include additional study sites and to approach surgeons and oncologists as a means of recruiting more breast cancer cases.

During the second year of the project we moved from the training phase into the investigation phase. We partially completed investigation task 1 by recruiting 37 women with breast cancer (74.0% of eligible breast cancer cases), 128 women receiving diagnostic mammograms (69.6% of eligible high risk controls), and 171 women receiving screening mammograms (63.6% of eligible controls) as of September 28, 2005. Of respondents, blood had been drawn on 23 women with breast cancer (62.1% of responding breast cancer cases), 124 women receiving diagnostic mammograms (96.9% of responding high risk controls), and 158 women receiving screening mammograms (92.4% of responding low risk controls). We partially completed investigation task 2 by conducting in-person and telephone interviews on breast cancer risk factors. We partially completed investigation task 3 by collecting anthropometric measurements and blood. We partially completed investigation task 4 by abstracting medical records for breast cancer screening, diagnosis and treatment. We partially completed investigation task 5 by processing and storing blood samples. We partially completed investigation task 6 by completing enzyme-linked immunosorbent assays on hormones and growth factors. We partially completed investigation task 7 by completing high-performance liquid chromatography analysis for urinary phytoestrogen. We partially completed investigation task 8 by entering data for all questionnaires and assays. We partially completed investigation task 9 by performing interim statistical analysis to assess data quality. We will partially complete, further complete or fully complete investigation tasks 10 through 16 in subsequent years.

During the third year of the project we will fully complete training task 1 by Dr. Peltz (UTB) completing the Master's of Public Health degree, and Dr. Johnson (UTB) continuing to audit courses. Dr. Estrada has left UTB and a decision on his replacement is pending. We will partially complete, further complete or fully complete investigation tasks 1 through 16.

Key Research Accomplishments

- Partially completed training task 1 by Dr. Peltz (UTB) taking epidemiology (advanced epidemiologic methods I and cancer), community health assessment, proposal development, individual study and practicum, and Drs. Estrada (UTB) and Johnson (UTB) auditing epidemiology, biostatistics, and behavioral sciences. Based on the proposal he wrote in the proposal development course, Dr. Peltz (UTB) received funding to conduct a pilot study of body composition and leptin concentration.

- Further completed training task 2 by Dr. Sanderson (UTSPH) receiving funding from the Texas Cancer Council to investigate the possibility of utilizing electronic pathology lab reporting to the Texas Cancer Registry on the Texas and Mexico sides of the border.

- Further completed training tasks 3, 4, and 6 through 8 by identifying the additional study sites and designing the South Texas Women's Health Project to include a urine collection; designing the protocol for high-performance liquid chromatography; obtaining additional institutional review board approval from several entities; and revising the study design as needed. Dr. Sanderson (UTSPH) received additional funding to conduct a pilot study of the South Texas Women's Health Project. Dr. Peltz (UTB) received supplemental funding from the Department of Defense to add urinary excretion of phytoestrogen to the South Texas Women's Health Project.

- Partially completed investigation tasks 1 through 9 by recruiting breast cancer cases and controls; conducting in-person and telephone interviews; collecting anthropometric measurements and blood; abstracting medical records; processing and storing blood samples; completing enzyme-linked immunosorbent assays; completing high-performance liquid chromatography analysis; entering data for all questionnaires and assays; and performing interim statistical analysis.

Reportable Outcomes

1) Manuscripts

Sanderson M, Shu XO, Yu H, Dai Q, Malin AS, Gao Y-T, Zheng W. Insulin-like growth factor-I, soy protein intake and breast cancer risk. Nutr Cancer 2004;50:8-15.

Sanderson M, Fernandez ME, Dutton RJ, Ponder A, Sosa D, Peltz G. Risk behaviors by ethnicity and Texas-Mexico border residence. Ethnicity Dis (In Press).

2) Abstracts

Peltz G, Sanderson M, Perez A, Estrada JK, Johnson M. Use of mammography by Texas-Mexico border residence and ethnicity. 4th Department of Defense Breast Cancer Research Program Meeting, Philadelphia, PA, June 2005.

Peltz G, Casares DO, Fadden MK, Calil RC, Perez A, Sanderson M. The use of body mass index for the diagnosis of obesity in Mexican Americans: A comparative study with bioelectrical impedance analysis. Annual Meeting of the North American Association for the Study of Obesity, Vancouver, CN, October, 2005.

Peltz G, Garcia ER, Calil RC, Fadden MK, Sanderson M. Self-perception of body image and body area dissatisfaction in Mexican Americans. Annual Meeting of the North American Association for the Study of Obesity, Vancouver, CN, October, 2005.

Sanderson M, Daling JR, Malone KE, Doody DR, Porter PL. Perinatal factors and mortality from breast cancer. 4th Department of Defense Breast Cancer Research Program Meeting, Philadelphia, PA, June 2005.

Sanderson M, Coker AL, Perez A, Fadden MK. A multilevel analysis of socioeconomic status and prostate cancer risk. Am J Epidemiol 2005;161:S43.

Aragaki CC, Sanderson M, Coker A, Cai Q, Hayes R, Zheng W. Aryl hydrocarbon receptor SNP *AHR* modifies the effect of pesticide use on prostate cancer in South Carolina. Am J Epidemiol 2005;161:S95.

Coker AL, Sanderson M, Fadden MK. Psychosocial stress, coping and prostate cancer. Am J Epidemiol 2005;161:S1.

Meyer TE, Coker AL, Sanderson M, Symanski E. Reduction of exposure misclassification in a case-control study of farming-related exposures and prostate cancer. Am J Epidemiol 2005;161:S1.

3) Grants

Name:	Insulin Resistance and Breast Cancer
Funding Agency:	National Institute of Minority Health and Health Disparities
Period of Funding:	March 1, 2003 – February 28, 2005
Amount:	$84,000 (total direct)
Name:	Partnership between the Texas Cancer Registry and the UTSPH-B for Assuring Timely, Complete and Accurate Cancer Data in the Lower Rio Grande Valley
Funding Agency:	Texas Cancer Council
Period of Funding:	March 1, 2005 – August 31, 2006
Amount:	$146,011 (total direct)
Name:	Supplement - Interrelationships of Hormones, Diet, Body Size, and Breast Cancer Among Hispanic Women
Funding Agency:	Department of Defense
Period of Funding:	August 8, 2005 – August 31, 2007
Amount:	$79,161 (total direct)
Name:	Serum Leptin Values in Mexican Americans: Association with Body Fat, Body Mass Index, and Obesity
Funding Agency:	University of Texas Health Science Center at San Antonio
Period of Funding:	September 1, 2004 – August 31, 2005
Amount:	$39,614 (total direct)

Conclusions

The overall goal of this Minority Institution Partnership Training Award is to further strengthen the collaborative relationship between the minority institution, UTB, and the collaborating institution, UTSPH. The UTSPH established a regional campus on the UTB campus in 2001, and the Co-Principal Investigator of the partnership from UTSPH is located in Brownsville. The vision of UTB and the UTSPH, Brownsville regional campus is to conduct community-based participatory research in areas deemed important by the community.

The training program will focus on breast cancer etiology, specifically the interrelationships between hormones, diet, body size and breast cancer among Hispanic women. The Lower Rio Grande Valley (LRGV) of Texas is an exceptional location to perform breast cancer research because 85 percent of the population is Hispanic. Hispanic women in the LRGV have a relatively low incidence of breast cancer compared with non-Hispanic white women. In comparison with Hispanic women in the US, Hispanic women residing in the LRGV have a higher mortality from breast cancer. In contrast, Hispanic women are at greater risk of insulin resistance. This research will allow us to investigate whether the reduced risk of breast cancer among Hispanic women in the LRGV may be related to their higher genetic susceptibility to insulin

resistance. Women tend to develop insulin resistance if they are genetically susceptible, gain excess weight due to physical inactivity, and consume a high-fat, low-fiber diet during adolescence and adulthood. It is clear that this area of research has promise with regard to explaining the different breast cancer incidence and mortality rates by ethnicity. We hypothesize that the South Texas Women's Health Project conducted as part of the training program will be useful in identifying factors associated with decreased breast cancer risk among Hispanic women.

While faculty from UTSPH have expertise in breast cancer research, faculty from UTB have strong ties with the medical and lay community in Brownsville and Cameron County. To date, no breast cancer research has been conducted in Cameron County. By partnering together, these institutions hope to achieve the following goals: 1) develop a regional cancer registry, 2) build infrastructure to conduct population-based case-control studies of breast cancer, 3) initiate studies to investigate factors which may protect Hispanic women from breast cancer, and 4) establish an outstanding breast cancer research program.

References

Sanderson M, Shu XO, Yu H, Dai Q, Malin AS, Gao Y-T, Zheng W. Insulin-like growth factor-I, soy protein intake and breast cancer risk. Nutr Cancer 2004;50:8-15.

Sanderson M, Fernandez ME, Dutton RJ, Ponder A, Sosa D, Peltz G. Risk behaviors by ethnicity and Texas-Mexico border residence. Ethnicity Dis (In Press).

Statement of Work

Interrelationships of Hormones, Diet, Body Size and Breast Cancer among Hispanic Women

Phase 1: Training phase (Year 1)

1) Complete coursework toward Master's of Public Health degree
2) Liaise with local medical providers, health clinics and state health agencies to encourage reporting of breast cancer to the Texas Cancer Registry
3) Identify sites for data collection with local health providers and health clinics
4) After consultation with local health providers design a case-control study to include completion of a questionnaire, urine collection, anthropometry and a blood draw
5) Develop a questionnaire appropriate for use with the local Hispanic population
6) Design protocols for data collection, laboratory work, tracking system, data entry programs, and write manual of operations
7) Initiate institutional review board approval through local and federal channels
8) Pilot test study methods and revise the study design as needed

Phase 2: Investigation Phase (Years 2 through 4)

1) Identify and recruit 500 breast cancer cases and 1000 controls identified by mammography centers
2) Complete questionnaires to obtain information on breast cancer risk factors, personal health history (e.g., type 2 diabetes), medication history (e.g., estrogen and insulin), and diet
3) Collect anthropometric measurements and pre-diagnostic blood
4) Abstract medical records for relevant health history and pathology data
5) Process and store blood samples
6) Complete enzyme-linked immunosorbent assays for insulin, insulin-like growth factor-I, insulin-like growth factor binding protein-3, and sex hormone-binding globulin, enzyme immunoassays for estradiol and estrone, and measure glucose on a biochemistry analyzer
7) Complete high-performance liquid chromatography (HPLC) analysis for urinary phytoestrogens
8) Complete data entry of all questionnaires and assays
9) Perform interim statistical analyses at end of year 2 to assess data quality
10) Perform final statistical analyses to test study hypotheses
11) Consult with local health providers and health clinics regarding the cancer reporting mechanism and provide training as needed
12) Expand data collection to cancers other than breast cancer as a means of developing a regional Lower Rio Grande Valley cancer registry.
13) Disseminate findings to the Texas Department of Health, the Department of Defense, and local health providers and health clinics
14) Prepare manuscripts to report study results
15) Archive dataset for future analyses and future patient follow-up
16) Submit proposals to conduct larger population-based case-control studies of breast cancer in the Lower Rio Grande Valley

Insulin-Like Growth Factor-I, Soy Protein Intake and Breast Cancer Risk

Maureen Sanderson, Xiao Ou Shu, Herbert Yu, Qi Dai,

Alecia S. Malin,Yu-Tang Gao, Wei Zheng

Previous studies have found that estrogen enhances the effect of insulin-like growth factor-I (IGF-I) levels on breast cancer cell growth. Participants in the Shanghai Breast Cancer Study (SBCS) consume large amounts of soy that is high in isoflavones, which act as weak estrogens and as anti-estrogens. We assessed whether soy protein intake modified the effect of IGF-I levels on breast cancer risk. The SBCS is a population-based case-control study of breast cancer among women aged 25 to 64 conducted between 1996 and 1998 in urban Shanghai. In-person interviews were completed with 1459 incident breast cancer cases ascertained through a population-based cancer registry, and 1556 controls randomly selected from the general population (with respective response rates of 91% and 90%). This analysis is restricted to the 397 cases and 397 matched controls for whom information on IGF-I levels was available. For premenopausal breast cancer, we found nearly significant interactions between soy protein intake and IGF-I levels (p=0.080) and insulin-like growth factor binding protein-3 (IGFBP-3) levels (p=0.057). The direction of the interaction appeared to be negative for IGF-I levels, but was positive for IGFBP-3 levels. No interaction was evident between soy protein intake and IGF-I or IGFBP-3 levels among postmenopausal women. Our results suggest that soy protein intake may negatively modulate the effect of IGF-I and may positively modulate the effect of IGFBP-3 levels on premenopausal breast cancer risk. Further studies are needed to confirm our finding and to understand the biological mechanisms of these potential interactions.

Risk Behaviors by Ethnicity and Texas-Mexico Border Residence

Maureen Sanderson, Maria E. Fernandez, Ronald J. Dutton,

Arlette Ponder, Dina Sosa, Gerson Peltz

Objective: To determine whether residence on the Texas-Mexico border would modify the effect of ethnic differences on risk behaviors.

Design: We performed an analysis of 1999-2003 cross-sectional data from the Texas Behavioral Risk Factor Surveillance System (BRFSS).

Setting: 15 Texas-Mexico border counties compared with 239 Texas non-border counties.

Participants: 521 white and 1,722 Hispanic residents of Texas-Mexico border counties and 16,904 white and 4,933 Hispanic residents of Texas non-border counties.

Main Outcome Measures: Health risk behaviors including overweight, obesity, physical inactivity, fruit or vegetable consumption, heavy drinking, binge drinking and smoking.

Results: Hispanic women and men were more likely to be overweight, obese, and physically inactive, and less likely to consumer fewer than 5 fruits or vegetables per day than whites regardless of residence. Ethnic differences in heavy and binge drinking differed by residence and gender. After adjustment for age, educational level, annual household income, perceived general health and diabetes, most behaviors that were higher or lower remained significant among non-border residents, but were no longer significant among border residents.

Conclusions: The only evidence of effect modification was binge drinking among males and most associations were weaker among border residents than among non-border residents.

Insulin Resistance and Breast Cancer

Maureen Sanderson, PI

The primary purpose of this proposed pilot study is to investigate the association between insulin resistance and breast cancer risk. We hypothesize that 1) insulin resistance, defined as high levels of insulin and glucose or type 2 diabetes, will be positively associated with breast cancer, and 2) the insulin resistance-breast cancer association will be more pronounced among women with abdominal obesity and high levels of estradiol (E2). The specific aims of the proposed case-control study are: 1) to obtain information on type 2 diabetes, waist and hip circumference, body mass index, body fat content, birth weight, age at which adult height was achieved, diet, physical activity, and weight gain, and to collect pre-diagnostic blood, 2) to assay blood for E2, sex hormone-binding globulin, insulin, glucose, and triglycerides, and 3) to perform statistical analyses to assess the association between insulin resistance and breast cancer risk, while accounting for confounding and interaction. This proposed study will be conducted in three mammographic centers. We plan to recruit 390 incident breast cancer cases and 390 control women. Breast cancer cases will be those women identified as having breast cancer through diagnostic mammography prior to undergoing treatment. Control women will be those women who are cancer free through screening mammography. In addition, control women will be at low risk of breast cancer defined as having no previous lesions that place her at higher than minimal risk, and no first-degree relative with a history of breast cancer or other hormone-related cancer. Insulin resistance may be associated with breast cancer, and may help explain the elevated risk of breast cancer among certain ethnic groups. Despite being at greater risk of insulin resistance, Hispanic women have a relatively low incidence of breast cancer. This proposed study may be useful in identifying factors assciated with decreased breast cancer risk among Hispanic women.

Partnership between the Texas Cancer Registry and the UTSPH-B for Assuring Timely, Complete and Accurate Cancer Data in the Lower Rio Grande Valley of Texas

Maureen Sanderson, PI

The Texas Cancer Registry (TCR) is one of nine state registries that have not achieved silver or gold certification through the North American Association of Central Cancer Registries (NAACCR). The Border region has one of the lowest completeness of case ascertainment and highest percentage of death certificate only cases in the state. Delays in reporting and failure to report outpatient cases may be due to Border residents being diagnosed, treated and/or dying in Mexico never to appear on the TCR. In addition to problems related to timeliness, quality and completeness of cancer reporting, the existing Certified Tumor Registrar (CTR) workforce in Texas is aging, with few young entrants into the profession. American College of Surgeons (ACoS) facilities will be required to have a CTR performing or supervising their tumor registration activities in order to maintain ACoS certification. An increasing number of facilities must report to the TCR and many facilities, especially those in rural areas, have expressed difficulty in attracting and retaining CTRs. The goals of the proposed project which focuses on the Border region of the state are: 1) to improve cancer registration and cancer data, and 2) to build capacity for a qualified cancer registration workforce. To accomplish the first goal we (the University of Texas-Houston School of Public Health at Brownsville – UTSPH-B) are proposing to partner with the TCR, the Texas A&M Health Science Center-School of Rural Public Health (SRPH), the University of Texas Health Science Center at San Antonio Laredo campus (UTHSC-SA), and San Antonio Cancer Institute (SACI) to utilize different methods for improving cancer registration. To accomplish the second goal we are proposing to partner with the TCR, the University of Texas at Brownsville (UTB), and the UTHSC-SA Laredo campus,

and SACI to build cancer registration capacity. Objectives of the proposed project are: 1) to pilot the feasibility of electronic pathology laboratory reporting from independent labs that perform diagnostic confirmation of cancer among Border residents, 2) to investigate the possible reporting of pathologic diagnoses for Border residents being performed across the Border, 3) to investigate the feasibility of identifying and obtaining information on Border residents with cancer who die in Mexico, 4) to train project staff to conduct cancer surveillance activities, and 5) to design a Bachelor of Science in Health Information Management degree with an emphasis in tumor registration to be offered through allied health schools. These activities will help improve the completeness of cancer case reporting and death information needed for survival analyses in the Border region, and will be replicated elsewhere in the state. The partnerships of three health science centers, an undergraduate institution, and a cancer institute with the TCR will assist in providing needed information for cancer research, prevention and control activities, and in moving the TCR closer towards achieving national gold certification. These partnerships should also lead to collaborations that will utilize data from the TCR to accurately assess the cancer burden within the state. We would like to include the Texas Cancer Council in our partnerships to improve cancer registration and to build capacity for a qualified cancer registration workforce in the Border region.

Urinary Excretion of Phytoestrogen and Breast Cancer among Hispanic Women

Gerson Peltz, PI

Phytoestrogen intake, measured as dietary consumption of phytoestrogens or as urinary excretion of phytoestrogens, has been found to be protective against breast cancer, especially in populations that consume large amounts of soy. Despite possessing many risk factors for breast cancer, Hispanic women have a relatively low incidence of the disease. A possible explanation for the lower risk of breast cancer among Hispanic women is their high consumption of grains rich in phytoestrogens. We hypothesize that high phytoestrogen intake, as measured by urinary excretion of phytoestrogen, will be protective against breast cancer in a population of Hispanic women. We propose to add urine collection and assessment of urinary excretion of phytoestrogen, another measure of phytoestrogen intake to the ongoing South Texas Women's Health Project, to more accurately reflect consumption of phytoestrogen-rich foods by women in our population. Specific aims of the proposed pilot project are: 1) to determine phytoestrogen intake by measuring urinary excretion of phytoestrogens on a sub-sample of 400 cases and 400 controls participating in our ongoing case-control study of breast cancer, 2) to investigate association between dietary consumption of phytoestrogen, urinary excretion of phytoestrogen, and blood levels of hormones and growth factors among controls, and 3) to evaluate whether phytoestrogen intake reduces breast cancer risk. We will add urine collection from subjects to the ongoing South Texas Women's Health Project. We will perform assays on urinary excretion of phytoestrogen on a sub-sample of 400 cases and 400 controls. We will conduct statistical analyses to evaluate phytoestrogen intake and its relation with hormones, growth factors and breast cancer. The proposed pilot project to be conducted within an ongoing case-control study will be one of very few breast cancer studies that have focused on Hispanic women. The

identification of protective factors against breast cancer among Hispanic women may contribute to our understanding of the biological mechanisms of the disease.

Serum Leptin Values in Mexican Americans: Association with Body Fat, Body Mass Index, and Obesity

Gerson Peltz, PI

The role of leptin in human obesity remains controversial. Leptin, the protein encoded by the *ob* gene, is produced in adipose tissue and released into circulation. Leptin interacts with a number of hypothalamic neuropeptide systems to regulate both feeding behavior and energy expenditure. Serum and plasma leptin concentrations are highly correlated with adiposity and body fat stores. However, the presence of high serum or plasma leptin concentrations in most obese subjects has been interpreted to suggest that human obesity is most often associated with resistance to the actions of leptin.

In population-based studies, limited attention has been paid to the relationship of leptin concentrations with body composition measures other than body mass index. However, since body mass index does not accurately measure adiposity, the effects of adiposity on leptin concentration may be more pronounced when more reliable methods are used to measure total body fat content. Additionally, the relationship between leptin concentration with body fat distribution is inconsistent. In contrast with metabolic syndrome, it is not sufficiently clear the correlation of central obesity with leptin concentration. Studies comparing ethnic groups thus far have shown conflicting results.

The proposed pilot project will investigate a) the correlation of serum leptin concentration with body fat content using bioelectrical impedance analysis, a more accurate tool to measure adiposity, and b) the correlation of serum leptin concentration with body fat distribution. In addition, the proposed pilot project will assess body composition using bioelectrical impedance analysis in a large sample of young Mexican American adults.

The Lower Rio Grande Valley is an area with high rates of nutrition related disorders, such as obesity and type-2 diabetes mellitus. The implementation of the proposed pilot project will be instrumental for developing further nutritional epidemiologic studies at The University of Texas at Brownsville. Along with the primary objectives, the proposed project will a) provide opportunities to enhance and expand biomedical research to undergraduate and graduate underrepresented students in order to promote awareness of biomedical careers, b) provide an excellent opportunity to develop a comprehensive community educational awareness program that will augment existing health education programs being viewed by health care workers and the general public, c) contribute to develop the infrastructure to support biomedical research and d) increase in the pipeline of students pursuing a science track leading to biomedical careers.